

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : Confirmation No. 1331  
Yukiyo SEKIMOTO et al. : Attorney Docket No. 2008\_1706  
Serial No. 10/572,895 : Group Art Unit 1655  
Filed March 20, 2006 : Examiner Michael V. Meller  
  
METHOD OF INHIBITING ALVEOLAR  
BONE REABSORPTION AND PERIODONTAL  
MEMBRANE LOSS AND COMPOSITION  
FOR INTERNAL USE TO BE USED THEREIN : Mail Stop: AMENDMENT

**DECLARATION UNDER 37 CFR 1.132**

Commissioner for Patents,  
Alexandria, VA  
Sir:

I, Hidehiko OTSUKI, the undersigned, a citizen of Japan, residing at 5-30-1 kaminamuro  
Takatsuki, Japan, do hereby declare:

1. That I am a co-inventor of the above-identified application.
2. That I graduated from Kyoto Institute of Technology on March, 1983.
3. I am familiar with U.S. Patent Application Serial No. 10/572,895, and the non-final rejection dated June 30, 2009. In particular, I am familiar with the rejection under 35 U.S.C. § 103(a) based on Lovett (U.S. Patent No. 6,881,419) in view of USDA-Iowa State University Database on Isoflavone Content of Foods 1999 (hereafter "USDA").
4. I provide the following comments in order to demonstrate the unobviousness of the claimed invention in view of the cited references.

**THE EXAMINER'S POSITION**

5. "Lovett teaches that Vitamin D3, calcium and soy isoflavones (which inherently

contain compounds such as genistein and daidzein) are in the same composition... Lovett does not teach the specifically claimed ratio of genistein/daidzein and the total weight of genistein and daidzein in the soy isoflavaone is at least 90%. USDA teaches that soy flour, full-fat, raw contains 71.19 of daidzein, 96.83 of genistein and thus has a ratio within the claimed amount and a total weight of genistein and daidzein in the soy isoflavone aglycone which is at least 90% exists in USDA... Thus, it would have been obvious at the time the invention was made to use the soy isoflavone (which inherently contains aglycones since isoflavones are contained in soybean or soyfoods in two chemical forms, i.e., aglycones and glucosides) of USDA in the invention of Lovett since USDA makes it clear that such amounts of genistein and daidzein were well known at the time the invention was made to exist in the claimed amounts. Clearly it was well within the purview of the ordinary artisan to do this since USDA is teaching such a well known soy flour which is well known as a source of soy isoflavones and clearly within the purview of the ordinary artisan to use as a well known source of soybean." (These comments by the Examiner are set forth on pages 6 and 7 of the Office Action of June 30, 2009.)

#### **REBUTTAL OF EXAMINER'S POSITION**

6. Aglycone is the non-sugar compound remaining after replacement of the glycosyl group from a glycoside with a hydrogen atom. Although aglycones are known, **the Lovett reference clearly fails to teach this form of isoflavone**. Thus, it is my opinion, as one of ordinary skill in the art, that one would not replace the soy isoflavone of Lovett with soy isoflavone **aglycone**, as required by the present invention, absent the discussion in the present specification.

7. Additionally, as described in detail below, the values taught by the USDA reference are not **actual values**, but rather are **theoretical values**.

8. The Documentation of the USDA document (submitted by Applicants with the response filed March 18, 2009) states "The glucoside forms of the isoflavones are converted to free forms (aglycone) to be absorbed by the gut and exert their potentially protective effects ... Therefore, we have converted the values for glucoside forms into aglycone (free) forms by using appropriate ratios of molecular weights and have added them to their respective free form values to generate mean values for each aglycone form: Daidzein, Genistein and Glycitein."

9. Accordingly, the values in the USDA reference are actually a **combination** of the

aglycone forms and a calculated number which corresponds to the glycoside forms. The values disclosed in the USDA reference do not represent only the amount of aglycone forms present in the soy flour.

10. Thus, although the description of Soy flour, full-fat, raw, as relied upon by the Examiner, states Daidzein: 71.19, and Genistein: 96.83, these are not actual values. Rather, these values are theoretical values calculated based on item 10 above. In interpreting the descriptions of the USDA reference, it is necessary that one consider the discussion at the beginning of the reference, specifically, the Documentation section, which describes the calculation of the disclosed values.

11. Isoflavones occur naturally in a soybean extract. However, the isoflavones occur as both the glycoside form (daidzin and genistin) and the aglycone form (daidzein and genistein).

12. The following Table (presented by Applicants in the response filed March 18, 2009), demonstrates that both aglycone and glycoside forms are present, and that the daidzein amount is greater than the genistein amount, in the naturally occurring extract, absent additional treatment.

	Aglycon			Glycoside or its derivatives		Total isoflavones (C)	(A+B)/C
	Daidzein (A)	Genistein (B)	A+B	Daidzin etc.	Genistin etc.		
Soybean	52	28	80	861	735	1789	0.04
Hypocotyl	1020	350	1370	7430	3670	21850	0.06

13. The ratio of daidzein to genistein recited in the claims of the present application does not occur naturally. Rather, it requires further treatment to change the glycoside forms to the aglycone forms. (The treatment step is described on page 5, line 34 to page 6, line 8 of the present specification.)

14. It is clear that the USDA reference does not teach a ratio of genistein/daidzein of 1/1 to 1.5/1, or a total weight of genistein + daidzein of at least 90%, as the values disclosed by the USDA reference are theoretical values, rather than actual values.

15. Thus, it is my opinion, as one of ordinary skill in the art, that even if one were to incorporate the soy flour of USDA into the composition of Lovett, the composition set forth in the present claims would still not be achieved.

I further declare that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

Date: November 24, 2019

Kideluho Otsuki

(Signature of Declarant)